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EXAMINER	
XIAO, KE	

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2629	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/663,316	DIEFENBAUGH ET AL.	
	Examiner	Art Unit	
	Ke Xiao	2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,4-12,14-22,25-32,35-42 and 44-50* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,4-12,14-22,25-32,35-42 and 44-50* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

Claims 32 and 42 rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Regarding **Claims 32 and 42**, the limitation "computer-readable storage medium" was amended into the claim as of July 25th 2007. This is considered new matter as "storage" was not part of the original disclosure.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 4, 6-8, 11, 12, 14, 16-18, 21, 22, 25 and 27-29 is rejected under 35 U.S.C. 103(a) as being unpatentable over Aleksic (US 2003/0210221) in view of Wada (US 2002/0154138).

Regarding independent **Claim 1**, Aleksic teaches a method comprising:

determining an ambient light level for an operating environment of a display device having an adjustable backlight to provide variable brightness by causing the duty cycle of the backlight control signal to be modified based on the ambient light level (Aleksic, Fig. 4 elements 405, 436, 440, 445, Pg. 3 paragraph [0028]);

modifying pixel color intensity values and contrast corresponding to of one or more portions of an image to be displayed on the display deice based on the ambient light level (Aleksic, Pg. 3 paragraph [0029]); and

modifying the backlight intensity based on the modified pixel color intensity values wherein modification to the backlight intensity approximately offsets the modification to the pixel color intensity values (Aleksic, Pg. 3 paragraphs [0028-0030]).

Aleksic fails to teach "scaling sub-pixel color on a per-pixel basis in order to achieve greater luminance in some areas of the display image, while reducing the luminance in other areas of the display image, wherein a brightness for one or more features within a displayed image is modified".

Wada teaches adjusting color intensity values by modifying brightness values in a color look-up table (Wada, Fig. 4, Pg. 2 paragraphs [0034-0042]). Such a look up table would be used to modify all the pixels on the screen where for scaling subpixel color on a per pixel basis, wherein a brightness for one or more features within a displayed image is modified. It would have been obvious to one of ordinary skill in the art at the time of the invention to have used the method of modifying a color look-up table to adjust pixel color intensity as taught by Wada in the device of Aleksic in order to allow the user more precise control over the color adjustment.

Aleksic in view of Wada fails to teach greater luminance in some areas of the display image, while reducing the luminance in other areas of the display image. The examiner takes official notice that color look up tables can be customized to increase brightness of highlights and decrease the brightness of shadows thereby increasing contrast, this is a well known technique called dynamic contrast. It would have been obvious to one of ordinary skill in the art at the time of the invention to use said technique along with the combination of Aleksic and Wada in order to increase the contrast ratio.

Regarding independent **Claim 12**, Aleksic teaches a method comprising:

determining an ambient light level fro a display device having an adjustable backlight to provide variable backlight intensity (Aleksic, Fig. 4 elements 405, 436, 440, 445, Pg. 3 paragraph [0028]);

modifying the backlight intensity based on the ambient light level by causing the duty cycle of the backlight control signal to be modified based on the ambient light level; (Aleksic, Fig. 4 elements 405, 436, 440, 445, Pg. 3 paragraph [0028]); and

modifying pixel color intensity values and contrast corresponding to one or more portions of an image to be displayed on the display device based on the modified intensity of the adjustable backlight (Aleksic, Pg. 3 paragraph [0029]); and

wherein modification to the pixel color intensity values approximately offsets the modification to the backlight intensity (Aleksic, Pg. 3 paragraphs [0028-0030]).

Aleksic fails to teach "scaling sub-pixel color on a per-pixel basis in order to achieve greater luminance in some areas of the display image, while reducing the

luminance in other areas of the display image, wherein a brightness for one or more features within a displayed image is modified".

Wada teaches adjusting color intensity values by modifying brightness values in a color look-up table (Wada, Fig. 4, Pg. 2 paragraphs [0034-0042]). Such a look up table would be used to modify all the pixels on the screen where for scaling subpixel color on a per pixel basis, wherein a brightness for one or more features within a displayed image is modified. It would have been obvious to one of ordinary skill in the art at the time of the invention to have used the method of modifying a color look-up table to adjust pixel color intensity as taught by Wada in the device of Aleksic in order to allow the user more precise control over the color adjustment.

Aleksic in view of Wada fails to teach greater luminance in some areas of the display image, while reducing the luminance in other areas of the display image. The examiner takes official notice that color look up tables can be customized to increase brightness of highlights and decrease the brightness of shadows thereby increasing contrast, this is a well known technique called dynamic contrast. It would have been obvious to one of ordinary skill in the art at the time of the invention to use said technique along with the combination of Aleksic and Wada in order to increase the contrast ratio.

Regarding independent **Claim 22**, Aleksic teaches an apparatus comprising:

an ambient light sensor to generate signals indicating a sensed ambient light level (Aleksic, Fig. 4 element 445);

a display device having an adjustable backlight source (Aleksic, Fig. 4 element 136 and 440); and

a graphics control device coupled with the ambient light sensor on the display device, the graphics control device to modify pixel color intensity values corresponding to one or more portions of an image and backlight intensity based on the sensed ambient light level (Aleksic, Fig. 4 element 440);

wherein the graphics control device modifies backlight intensity based on the sensed ambient light level by causing the duty cycle of the backlight control signal to be modified based on the ambient light level and modifies the pixel color intensity values and contrast corresponding to one or more portions of an image to be displayed on the display device based on the modified backlight intensity (Aleksic, Fig. 4 elements 440, 450 and 455, Pg. 2 paragraph [0021] Pg. 4 paragraphs [0034-0035]).

Aleksic fails to teach "the graphics control device scales sub-pixel color on a per-pixel basis in order to achieve greater luminance in some areas of the display image, while reducing the luminance in other areas of the display image, wherein a brightness for one or more features within a displayed image is modified".

Wada teaches adjusting color intensity values by modifying brightness values in a color look-up table (Wada, Fig. 4, Pg. 2 paragraphs [0034-0042]). Such a look up table would be used to modify all the pixels on the screen where for scaling subpixel color on a per pixel basis, wherein a brightness for one or more features within a displayed image is modified. It would have been obvious to one of ordinary skill in the art at the time of the invention to have used the method of modifying a color look-up

table to adjust pixel color intensity as taught by Wada in the device of Aleksic in order to allow the user more precise control over the color adjustment.

Aleksic in view of Wada fails to teach greater luminance in some areas of the display image, while reducing the luminance in other areas of the display image. The examiner takes official notice that color look up tables can be customized to increase brightness of highlights and decrease the brightness of shadows thereby increasing contrast, this is a well known technique called dynamic contrast. It would have been obvious to one of ordinary skill in the art at the time of the invention to use said technique along with the combination of Aleksic and Wada in order to increase the contrast ratio.

Regarding **Claims 4 and 14**, Aleksic further teaches that determining the ambient light level comprises receiving a signal from an ambient light sensor indicating the ambient light level (Aleksic, Pg. 3 paragraphs [0028-0029]).

Regarding **Claim 6**, Aleksic fails to teach that modifying the pixel color intensity values comprises modifying brightness values in a color look-up table. Wada teaches adjusting color intensity values by modifying brightness values in a color look-up table (Wada, Fig. 4, Pg. 2 paragraphs [0034-0042]). It would have been obvious to one of ordinary skill in the art at the time of the invention to have used the method of modifying a color look-up table to adjust pixel color intensity as taught by Wada in the device of Aleksic in order to allow the user more precise control over the color adjustment.

Regarding **Claims 7 and 17**, Aleksic further teaches wherein modifying the backlight intensity comprises modifying a pulse width modulation signal that controls backlight illumination (Aleksic, Pg. 2 paragraph 0021]).

Regarding **Claims 8 and 18**, Aleksic further teaches wherein modifying the backlight intensity comprises:

determining a hardware register value corresponding to a baseline backlight intensity value (Aleksic, Fig. 4 element 142);

applying a software generated value to the register value to generate a modified backlight intensity value (Aleksic, Fig. 4 element 440); and

using the modified backlight intensity value to cause the backlight intensity to be modified (Aleksic, Fig. 4 element 450).

Regarding **Claims 11 and 21**, Aleksic further teaches wherein the hardware register value is stored in a register within a peripheral component interconnect configuration space (Aleksic, Fig. 4 element 142).

Regarding **Claims 16**, Aleksic further teaches wherein modifying the pixel color intensity values comprises modifying a pixel color using a graphics controller look-up table prior to passing the pixel to the display device (Aleksic, Fig. 4 elements 440 and 455, Pg. 4 paragraphs [0034-0035]).

Regarding **Claim 25**, Aleksic further teaches wherein the display device comprises a flat-panel liquid crystal display (Aleksic, Pg. 4 paragraph [0031]).

Regarding **Claim 27**, Aleksic further teaches that the graphics control device comprises:

a backlight control circuit coupled with the adjustable backlight source to control the intensity of backlight provided by the adjustable backlight source (Aleksic, Fig. 4 element 440); and

a display control circuit coupled with the ambient light sensor and the backlight control circuit to apply an adjustment to a baseline backlight including at least the sensed ambient light level to generated a modified backlight intensity signal (Aleksic, Fig. 4 element 142);

wherein the backlight control circuit causes the adjustable backlight source to provide a backlight intensity corresponding to the modified backlight intensity value (Aleksic, Fig. 4 elements 142, 440 and 450).

Regarding **Claim 28**, Aleksic further teaches that the backlight control circuit provides a pulse width modulated signal to the adjustable backlight source to control the intensity of the backlight provided by the adjustable backlight source (Aleksic, Pg. 2 paragraph 0021]).

Regarding **Claim 29**, Aleksic further teaches that the baseline backlight intensity is retrieved from a register coupled with the backlight controller (Aleksic, Fig. 4, 142).

Claims 5, 9, 10, 15, 19, 20, 30-32, 35-42 and 44-50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aleksic (US 2003/0210221) in view of Wada (US 2002/0154138) as applied to claims 1, 4, 6-8, 11, 12, 14, 16-18, 21, 22, 25 and 27-29 in further view of Lin (US 6,618,045).

Regarding independent **Claim 32**, Aleksic teaches one or more processing devices (Aleksic, Fig. 4) which:

determine an ambient light level for a display device having an adjustable backlight to provide variable backlight intensity by causing the duty cycle of the backlight control signal to be modified based on the ambient light level (Aleksic, Fig. 1 element 140 and 145, Fig. 4 element 445);

modify pixel color intensity values and contrast corresponding to of one or more portions of an image to be displayed on the display device based on the ambient light level (Aleksic, Fig. 4 element 440, 457, and 455); and

modify the backlight intensity based on the modified pixel color intensity values wherein modification to the backlight intensity approximately offsets the modification to the pixel color intensity values (Aleksic, Fig. 4 elements 440, 450 and 455, Pg. 2 paragraph [0021] Pg. 4 paragraphs [0034-0035]).

Aleksic fails to teach an article comprising a computer-readable medium having stored thereon instructions that, when executed, cause the one or more processing devices to perform the above functions.

Lin teaches that modifying color, brightness, and/or contrast can be done through any combination of software or hardware (Lin, Fig. 3, Col. 3 lines 59-63). Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to use a computer-readable medium having stored thereon instructions that, when executed causes the one or more processing devices to perform any function as taught

by Lin instead of the hardware described by Aleksic because software implementation would provided added flexibility to the system of Aleksic.

Aleksic fails to teach "scaling sub-pixel color on a per-pixel basis in order to achieve greater luminance in some areas of the display image, while reducing the luminance in other areas of the display image, wherein a brightness for one or more features within a displayed image is modified".

Wada teaches adjusting color intensity values by modifying brightness values in a color look-up table (Wada, Fig. 4, Pg. 2 paragraphs [0034-0042]). Such a look up table would be used to modify all the pixels on the screen where for scaling subpixel color on a per pixel basis, wherein a brightness for one or more features within a displayed image is modified. It would have been obvious to one of ordinary skill in the art at the time of the invention to have used the method of modifying a color look-up table to adjust pixel color intensity as taught by Wada in the device of Aleksic in order to allow the user more precise control over the color adjustment.

Aleksic in view of Wada fails to teach greater luminance in some areas of the display image, while reducing the luminance in other areas of the display image. The examiner takes official notice that color look up tables can be customized to increase brightness of highlights and decrease the brightness of shadows thereby increasing contrast, this is a well known technique called dynamic contrast. It would have been obvious to one of ordinary skill in the art at the time of the invention to use said technique along with the combination of Aleksic and Wada in order to increase the contrast ratio.

Regarding independent **Claim 42**, Aleksic teaches one or more computing devices (Aleksic, Fig. 4) used to:

determine an ambient light level for a display device having an adjustable backlight to provide variable backlight intensity (Aleksic, Fig. 4 element 445);

modify the backlight intensity based on the ambient light level by causing the duty cycle of the backlight control signal to be modified based on the ambient light level (Aleksic, Fig. 4 element 440) ; and

modify pixel color intensity values and contrast corresponding to one or more portions of an image to be displayed on the display device based on the modified intensity of the adjustable backlight (Aleksic, Fig. 4 element 440 and 457);

wherein modification to the pixel color intensity values approximately offsets the modification to the backlight intensity (Aleksic, Fig. 4 elements 440, 450 and 455, Pg. 2 paragraph [0021] Pg. 4 paragraphs [0034-0035]).

Aleksic fails to teach "the graphics control device scales sub-pixel color on a per-pixel basis in order to achieve greater luminance in some areas of the display image, while reducing the luminance in other areas of the display image, wherein a brightness for one or more features within a displayed image is modified".

Wada teaches adjusting color intensity values by modifying brightness values in a color look-up table (Wada, Fig. 4, Pg. 2 paragraphs [0034-0042]). Such a look up table would be used to modify all the pixels on the screen where for scaling subpixel color on a per pixel basis, wherein a brightness for one or more features within a displayed image is modified. It would have been obvious to one of ordinary skill in the

art at the time of the invention to have used the method of modifying a color look-up table to adjust pixel color intensity as taught by Wada in the device of Aleksic in order to allow the user more precise control over the color adjustment.

Aleksic in view of Wada fails to teach greater luminance in some areas of the display image, while reducing the luminance in other areas of the display image. The examiner takes official notice that color look up tables can be customized to increase brightness of highlights and decrease the brightness of shadows thereby increasing contrast, this is a well known technique called dynamic contrast. It would have been obvious to one of ordinary skill in the art at the time of the invention to use said technique along with the combination of Aleksic and Wada in order to increase the contrast ratio.

Aleksic fails to teach an article comprising a computer-readable medium having stored thereon instructions that, when executed, cause the one or more processing devices to perform the above functions.

Lin teaches that modifying color, brightness, and/or contrast can be done through any combination of software or hardware (Lin, Fig. 3, Col. 3 lines 59-63). Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to use a computer-readable medium having stored thereon instructions that, when executed causes the one or more processing devices to perform any function as taught by Lin instead of the hardware described by Aleksic because software implementation would provide added flexibility to the system of Aleksic.

Regarding **Claims 35 and 44**, Aleksic in view of Lin further teaches wherein the instructions that cause the one or more processing devices to determine the ambient light level comprise instructions that, when executed, cause the one or more processing devices to receive a signal from an ambient light sensor indicating the ambient light level (Aleksic, Fig. 4 element 440).

Regarding **Claims 36 and 45**, Aleksic fails to teach instructions as claimed. Lin further teaches instructions that cause one or more processing devices to determine the ambient light level comprising instructions that, when executed, cause the one or more processing devices to receive user input (Lin, Col. 5 lines 5-33). It would have been obvious to one of ordinary skill in the art at the time of the invention to have further used the instructions as taught by Lin in the display system of Aleksic in order to allow specific adjustment as set by the user (Lin, Col. 5 lines 5-33).

Regarding **Claims 37 and 46**, Aleksic in view of Lin further teaches that the instructions that cause the one or more processing devices to modify the pixel color intensity values comprise instructions that, when executed, cause the one or more processing devices to adjust the pixel luminance, using brightness values in a color look-up table (Aleksic, Pg. 4 paragraphs [0034-0035]).

Regarding **Claims 38 and 47**, Aleksic in view of Lin further teaches that the instructions that cause one or more processing devices to modify the backlight intensity comprise instructions that, when executed, cause the one or more processing devices to modify a pulse width modulation signal that controls backlight illumination (Aleksic, Pg. 2 paragraph 0021]).

Regarding **Claims 39 and 48**, Aleksic in view of Lin further teaches that the instructions that cause one or more processing devices to modify the backlight intensity further comprise instructions that, when executed, cause the one or more processing devices to:

determine a hardware register value corresponding to a baseline backlight intensity value (Aleksic, Fig. 4 element 122);

apply a software generated value to the register value to generated a modified backlight intensity value (Aleksic, Fig. 4 element 440); and

use the modified backlight intensity value to cause the backlight intensity to be modified (Aleksic, Fig. 4 element 455).

Regarding **Claims 5 and 15**, Aleksic fails to teach that determining the ambient light level comprises receiving a user input. Lin teaches that determining the ambient light level comprises receiving a user input (Lin, Col. 5 lines 5-33). It would have been obvious to one of ordinary skill in the art at the time of the invention to have used the input of Aleksic as taught by Lin in order to allow specific adjustment as set by the user (Lin, Col. 5 lines 5-33).

Regarding **Claims 9, 19, 30, 40 and 49**, Aleksic fails to teach that the baseline backlight intensity value is determined based on a user provided input. Lin teaches that baseline settings can be determined based on user provided input (Lin, Col. 5 lines 34-45). It would have been obvious to one of ordinary skill in the art at the time of the invention to base the baseline backlight intensity as taught by Aleksic on a user provided input as taught by Lin in order to save power (Lin, Col. 5 lines 34-45).

Regarding **Claim 10, 20, 31, 41 and 50**, Aleksic fails to teach that the baseline backlight intensity value is determined based on a power state of the display device. Lin teaches that baseline settings can be determined based a power state of the display device (Lin, Col. 5 lines 34-45). It would have been obvious to one of ordinary skill in the art at the time of the invention to base the baseline backlight intensity as taught by Aleksic on a power state of the display device as taught by Lin in order to save power (Lin, Col. 5 lines 34-45).

Claims 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aleksic (US 2003/0210221) in view of Wada (US 2002/0154138) as applied to claims 1, 4, 6-8, 11, 12, 14, 16-18, 21, 22, 25 and 27-29 in further view of Kim (US 2004/0156183).

Regarding **Claim 26**, Aleksic fails to teach that the display device comprises a plasma display device. Instead Aleksic teaches a liquid crystal display device. Kim teaches plasma display devices can be interchangeable with liquid crystal devices when applying backlight technology (Kim, Pg. 5 paragraph [0086]). It would have been obvious to one of ordinary skill in the art at the time of the invention to replace the display device of Aleksic with the plasma display device as taught by Kim because plasma display devices have higher contrast ratios.

Response to Arguments

Applicant's arguments with respect to claims 1, 12, 22, 32 and 42 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ke Xiao whose telephone number is (571)272-7776. The examiner can normally be reached on Monday through Friday from 8:30AM to 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sumati Lefkowitz can be reached on (571) 272-3638. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Sumati Lefkowitz/
Supervisory Patent Examiner, Art Unit 2629

/Ke Xiao/
Examiner, Art Unit 2629